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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

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GB/T 3903.1-2017

Replacing GB/T 3903.1-2008

**Footwear -- Test methods for whole shoe
-- Flexing resistance**

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Table of Contents

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Principle.....	4
4 Apparatus.....	5
5 Test piece	6
6 Test conditions.....	6
7 Test procedures.....	7
8 Test results	8
9 Test report	8

Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard supersedes GB/T 3903.1-2008 *Footwear -- General test methods -- Flexing resistance*. Compared with GB/T 3903.1-2008, the main technical differences are as follows:

- MODIFY the standard name;
- MODIFY the scope of application of the standard;
- MODIFY the description of the standard principle;
- MODIFY the number of samples;
- ADD the requirements for holders in the flexing resistance testers;
- MODIFY the test procedures;
- MODIFY the description of the test results.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority shall not be held responsible for identifying any or all such patent rights.

This Standard was proposed by the China National Light Industry Council.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Shoemaking (SAC/TC 305).

Drafting organizations of this Standard: China Leather and Footwear Industry Research Institute, Anta (China) Co., Ltd, Dezhou Xinhuarun Technology Co., Ltd, China Leather and Footwear Industry Research Institute (Jinjiang) Co., Ltd, Guangdong Wanlima Industry Co., Ltd.

Main drafters of this Standard: Qin Xiaobo, Li Su, Li Yucai, Shi Yiwei, Shen Yimin, Ye Yahong.

The previous released editions of this Standard are as follows:

- GB 3904-1983.
- GB/T 3903.1-1994, GB/T 3903.1-2008.

Footwear -- Test methods for whole shoe --

Flexing resistance

1 Scope

This Standard specifies the test methods for flexing resistance of whole shoes or soles.

This Standard is applicable to whole shoes and soles.

This Standard is not applicable to the whole shoes or soles with a height greater than 70mm, or a thickness of the sole flexion site greater than 25mm, or a bending angle less than 45° after rigidity is tested according to the provisions of 8.4.1 in GB/T 20991-2007.

NOTE 1: The thickness of the sole flexion site includes the thickness of the insole.

NOTE 2: The sole material (sheet) can be determined with reference to this Standard.

2 Normative references

The following documents are essential to the application of this document. For dated references, only the editions with the dates indicated are applicable to this document. For undated references, only the latest editions (including all the amendments) are applicable to this document.

GB/T 20991-2007 *Personal protective equipment -- Test methods for footwear*

GB/T 22049 *Footwear -- Standard atmospheres for conditioning and testing of footwear and components for footwear*

3 Principle

After a whole shoe or sole is conducted with the flexing test on a flexing resistance tester at a certain flexing angle and frequency, OBSERVE the changes in upper, sole, and upper-sole bonding site.

7 Test procedures

7.1 Before the test, in accordance with the provisions of GB/T 22049, the test pieces shall be placed at a standard ambient temperature of (23 ± 2) °C for at least 4h.

7.2 CHECK the test pieces. If there are any impurities on the surface, USE gauze moistened with alcohol to wipe them clean.

7.3 Each test piece is equipped with a fitting flexible test last (4.2). Under normal circumstances, the last size should be 5mm less than the footwear size, so that the vamp is not tight.

EXAMPLE: If the footwear size of the test piece is 240, a flexible test last with a last size of 235 should be selected.

7.4 BEND the test pieces. MARK the position of metatarsophalangeal flexion on both sides of the shoe. CONNECT these two positions to draw a flex line on the sole.

7.5 CLAMP the test pieces in the holder of the flexing resistance tester (4.1). The flex line on the sole, the steel shaft of the flexible test last, and the axis of the holder's movable shaft shall be at the same level.

7.6 PLACE the tester at the minimum flexing angle. ADJUST the tilt angle of the holder. OBSERVE the position of the heel so that the test piece is in a natural state without being bent in any direction.

7.7 ADJUST the eccentricity of the tester so that the flexing angle reaches the specified angle (6.1).

7.8 If cutting is required, SLICE a 5mm long cut in the middle of the flex line on the sole. In addition, CUT through the sole.

7.9 RESET the counter of the tester. PRESET the number of flexing to 40,000 times (in case of other requirements in the product standards, it shall be implemented according to the product standards). ACTIVATE the blower. Then TURN on the main unit.

7.10 During the operation of the tester, OBSERVE the clamping condition of the test pieces. If there is looseness or a change in flexion position, the device shall be shut down in time for adjustment.

7.11 After shutdown as per preset number of times, BEND the flexing resistance tester to the maximum flexing angle. USE a Vernier caliper (4.3) to measure the length and number of new cracks. In case of cutting, it is also necessary to measure the extended length of the cut on the sole.

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